Amendments to the Specification

Page 22, lines 1-10, please amend the paragraph as follows:

Figure 1 illustrates relevant portions of a hybrid fiber cable television network 100 of the invention. At a head-end 101 (see figure 6), an optical transmitter 106 (see figure 2) converts an electronic multicarrier signal for analog television broadcast, into a optical multicarrier signal in optical fiber 107. Optical splitter 108 splits the optical signal up into a plurality of optical signals in different optical fibers for respective fiber-hubs such as fiber 113. The signal transmitted by transmitter 106 is a conventional analog television broadcast signal typical of cable television systems as described above with a carrier frequency band of nominally 50-550 MHz for NTSC and 65-550 MHz for PAL broadcasts.

Page 24, lines 24-27, please amend the paragraph as follows:

At fiber-hub 102, return optical paths (170-174) are connected to return optical fibers 144-148 by couplers ~~175-179~~(e.g., 175 and 178-179). Thus, each optical path 170-174 carries an input light beam modulated by ~~an~~ a multitude of carrier signals modulated by respective base band information signals. Each carrier signal in a light beam having a different radio frequency.

Page 25, lines 3-25, please amend the paragraph as follows:

In optical up-converter 180, input optical paths 170-174 are divided into groups of 1 to 6 paths such as paths 170-173. The information signals carried by the light beams in a group of multiple input optical paths are all carried in a single return light

beam in a single respective output optical path. That is, for example, all the return information signals from HFCNs 130-133, carried in input optical paths 170-173 are all carried in a single output optical path 215 toward head-end 101. More specifically, for example, the return information signals that modulate the carrier signals with frequencies between 5 and 50 MHz in input optical path 170, then modulate carrier signals with frequencies between 400 and 450 MHz in output optical path 215. The return information signals that modulate carrier signals with frequencies between 5 and 50 MHz in input optical path 171, then modulate carrier signals with frequencies from 450 and 500 MHz in output optical path 215. The return information signals that modulate carrier signals with frequencies between 5 and 50 MHz in input optical path 172, then modulate carrier signals with frequencies from 500 and 550 MHz in output optical path 215. The return information signals that modulate carrier signals with frequencies between 5 and 50 MHz in input optical path ~~174~~173, then modulate carrier signals with frequencies from 550 and 600 MHz in output optical path 215. Thus, four return light beams with information signals that modulate carrier signals with frequencies of 5-50 MHz are converted into a single light beam with the same information signals modulating carrier signals with frequencies of 400-600, MHz. Similarly, the information in 6 light beams with information signals that modulate carrier signals with frequencies of 5-50 MHz are converted into a single light beam with the same information signals modulating carrier signals with frequencies of 600-900 MHz in optical path 219. Both the 400-600 and 600-900 MHz bands are non-overlapping and less than half an octave wide. Using two non-overlapping bans reduces SRS and allows filtering out second order and fourth order distortions.

Page 26, lines 7-18, please amend the paragraph as follows:

In optical up-converter (180), an array 181 of optical receivers 182-185 (see figure ~~2~~3) convert a multitude of multicarrier return light beams in respective optical paths 170-174 into a corresponding multitude of electronic return signals in respective input electronic paths or conductors 190-198. Thus, the same information signals that modulate carrier signals that modulate the light beams in input optical paths 170-174, also modulate carrier signals that modulate current (or potential) in input conductors 190-198, the carrier signals having the same frequencies in the input optical paths as in the input conductors. An array 200 of electronic up-converters 201-204 (see figure 4) convert the multicarrier electronic return signals in input conductors 190-198, modulated by carrier signals in a lower frequency range, into multicarrier electronic return signals in input conductors 205-208 modulated by carrier signals of a higher frequency. That is, each return information signal that modulates a carrier signal in conductors 190-198, also modulates a higher frequency carrier signal in conductors 205-208.

Page 27, lines 6-14, please amend the paragraph as follows:

An array 209 of optical transmitters 210-~~214~~ 213 (see figurers ~~3~~2) convert each multicarrier return electronic current signal carrying the higher frequency carrier signals carrying return information signal in conductors 205-208 into a corresponding multicarrier return light beam carrying the same higher frequency carrier signals carrying the same return information signals in respective output optical paths 215-~~219~~218. Each return light beam in optical paths 214-~~219~~ 218 has a different respective optical wavelength with sufficient spacing between the wavelengths for subsequently separating the light beam using a DWDM after they are combined into the same common optical fiber. Preferably, the wavelength of

the light beams in paths 215-219 are between 1220 and 1360 nm or between 1480 and 1620 nm.

Page 27, lines 15-23, please amend the paragraph as follows:

The optical up-converter 180 may also include~~s~~ DWDM 220 which combines a all the optical signals (light beams) in optical paths 215-~~219~~ 218 into a single common optical path 221. Output coupler (222) connects common fiber (223) to output optical path (221). Controller 225 controls the conversion of frequencies in electronic up-converters 201-204 and controls the wavelength of laser transmitters 210-214. In addition, (not shown) the controller may control the connections between the optical receivers 182-185 and electronic up-converters 201-204 and/or between electronic up-converters 201-204 and laser transmitters 210-214 in order to provide flexibility and rerouting around failed components such as failed laser transmitters. The controller may control various portions of the receivers ~~end~~ and transmitters as described below with reference to figures 2 and 3.

Page 27, lines 24-29, please amend the paragraph as follows:

At the head-end, ~~VWDM~~DWDM 204 separates the multiple light beams from common optical fiber 223 and routes a single respective light beam into each one of single optical paths 241-242. An array 243 of receivers 244-245 convert the return light beams in respective optical paths 241-242 into respective electronic return signals in respective optical paths 246-247. The electronic return signals contain the same carrier signals modulated by the same information signals as the respective optical return signals.

Page 30, lines 16-21, please amend the paragraph as follows:

Preferably, one or more of the components of the receiver are controlled by control line 299. The bias of the photo-detector may have to be adjusted due to changes in the input power of the optical signal or due to degradation of components of the system, ~~precompensator~~post compensator ~~256~~ 290 may have to be adjusted depending on changes in the length of the fiber through which the optical beam is transmitted, and power amplifier ~~298~~ 296 may need to be adjusted because system requirements may change.

Page 37, lines 17-30, please amend the paragraph as follows:

In figure 1, HFCN 134 includes a WDM ~~170~~700 to separate the analog broadcast optical signal from the forward digital signal. Separate receivers ~~171~~701 and ~~172~~702 are used for each respective signal to convert the optical signals to electronic signals. Separate receivers allows post-processing the forward digital electronic signal before it is combined with the analog broadcast electronic signal. The post-processing may include shaping, post-distortion, and/or filtering e.g. filtering out of some of the distortions in the forward digital signals, so as to reduce noise in the analog broadcast signal. Essentially all second order distortions could be filtered out, if the range of carrier signal frequencies in each separated beam carrying the forward signals, is limited to less than an octave (e.g. 550-1100 MHz). More preferably, two light beams for forward digital signals are each limited to carrier frequency ranges of less than half an octave, so that, essentially all 4^{th} order distortions could be filtered out (e.g. 550-835 MHz and 835-1260 MHz). Also, the narrower the carrier frequency band, the more third order distortions and higher order distortions can be filtered out. After post-processing combiner 703 combines the analog broadcast signals and forward digital signals into coaxial cable network 140.

Page 61, lines 4-15, please amend the abstract as follows:

A hybrid fiber cable network includes multiple nodes, each of which receives a first multi-carrier return signal from multiple customers with carrier signals in a first frequency band. In a fiber-hub, one or more first multi-carrier signals are converted into a second multi-carrier signal with carrier signals in a second band. Each information signal modulates a different higher frequency carrier signal in the second signal. A multitude of second multi-carrier signals are converted into optical signals with different optical wavelengths, multiplexed onto an optical fiber, and transmitted to the head-end. The first frequency band is below 200 MHz, preferably from 5 to 50 MHz. The second frequency band is above 200 MHz, preferably between 300 and 1200 MHz to reduce crosstalk due to stimulated ~~Ramon~~ Raman scattering (SRS). Preferably, each second frequency band is no more than one octave wide, and more preferably, no more than one half an octave wide.